

Abstract of Disclosure

A precision soft-touch gripping mechanism has a mounting plate attached to a robot arm. The plate supports a stepper motor. The output shaft of the stepper motor is connected through a spring to an elongated finger that slides in a central longitudinal slot of the plate and supports a first wafer gripping post, while on the end opposite to the first wafer gripping post the mounting plate pivotally supports two L-shaped fingers with a second and third wafer gripping posts on their respective ends. The mounting plate in combination with the first sliding finger and two pivotal fingers forms the end effector of the robot arm which is thin enough for insertion into a wafer-holding slot of a wafer cassette. The end effector is equipped with a mapping sensor for detecting the presence or absence of the preceding wafer, wafer position sensors for determining positions of the wafer with respect to the end effector, and force sensors for controlling the wafer gripping force. Several embodiments relate to different arrangements of gripping rollers and mechanisms for control of the gripping force and speed of gripping required for gripping the wafer with a soft and reliable touch.